



ARIZONA STATE UNIVERSITY
GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course information:

Copy and paste current course information from Class Search/Course Catalog.

Academic Unit	<u>Ira A. Fulton Schools of Engineering</u>	Department	<u>Dean, Ira A. Fulton Schools of Engineering</u>
Subject	<u>FSE</u>	Number	<u>150</u>
		Title	<u>Perspectives on Grand Challenges for Engineering</u>
			Units: <u>3</u>
Is this a cross-listed course? If yes, please identify course(s)	<u>No</u>		
Is this a shared course? Course description:	<u>No</u>	If so, list all academic units offering this course _____	

This course, centered on the theme of National Academy of Engineering's (NAE) Grand Challenges for Engineering in the 21st century, will offer the opportunity for students to develop an interdisciplinary appreciation for the Grand Challenges. This course will increase students' awareness of the social complexities of meeting the needs of local and global challenges through engineering and technology. Students will also learn more about the Grand Challenge Scholars program, begin their path towards making a Grand Challenge area their life's passion, and will start creating a plan to complete the program components during their undergraduate studies.

Requested designation: Social and Behavioral Sciences-SB
Note- a separate proposal is required for each designation requested

Eligibility:

Permanent numbered courses must have completed the university's review and approval process. For the rules governing approval of omnibus courses, contact Phyllis.Lucie@asu.edu or Lauren.Leo@asu.edu.

Submission deadlines dates are as follow:

For Fall 2015 Effective Date: October 9, 2014 For Spring 2016 Effective Date: March 19, 2015

Area(s) proposed course will serve:

A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Checklists for general studies designations:

- Complete and attach the appropriate checklist
- * Literacy and Critical Inquiry core courses (L)
 - * Mathematics core courses (MA)
 - * Computer/statistics/quantitative applications core courses (CS)
 - * Humanities, Arts and Design core courses (HU)
 - * Social-Behavioral Sciences core courses (SB)
 - * Natural Sciences core courses (SO/SG)
 - * Cultural Diversity in the United States courses (C)
 - * Global Awareness courses (G)
 - * Historical Awareness courses (H)

A complete proposal should include:

- Signed General Studies Program Course Proposal Cover Form
- Criteria Checklist for the area
- Course Catalog description
- Course Syllabus
- Copy of Table of Contents from the textbook and list of required readings/books

Respectfully request that proposals are submitted electronically with all files compiled into one PDF. If necessary, a hard copy of the proposal will be accepted.

Contact information:

Name	<u>Amy Trowbridge</u>	Phone	<u>480-965-4830</u>
Mail code	<u>5506</u>	E-mail:	<u>aktrow@asu.edu</u>

Department Chair/Director approval: (Required)



ARIZONA STATE UNIVERSITY

Chair/Director name (Typed): Dr. James Collofello, Associate Dean Date: _____

Chair/Director (Signature): see email

Amy Sever

From: James Collofello
Sent: Friday, August 08, 2014 1:17 PM
To: Amy Sever
Cc: Jeremy Helm
Subject: RE: FSE 150-SB designation-need approval today

Sorry for the tardy reply -- all of this looks great. You have my permission to sign my name on the form.

jim

James S. Collofello
Senior Associate Dean of Academic and Student Affairs Professor of Computer Science and Engineering

From: Amy Sever
Sent: Friday, August 08, 2014 8:18 AM
To: James Collofello
Cc: Jeremy Helm
Subject: FSE 150-SB designation-need approval today

Jim,

Sorry to bother you, but I need your approval today for the SB proposal for FSE 150. I'm at E2 Camp Monday-Wednesday and I need to pull together your approval and the whole proposal to submit by the August 12 deadline.

Thanks,

Amy Sever
Associate Director, Undergraduate Student Engagement Ira A. Fulton Schools of Engineering
480-727-8713
amy.sever@asu.edu<mailto:amy.sever@asu.edu>

From: Amy Sever
Sent: Tuesday, August 05, 2014 1:45 PM
To: James Collofello
Subject: FSE 150-SB designation

Jim,

Attached is the proposal from Amy Trowbridge for the FSE 150 Perspectives in Grand Challenges for Engineering course to become an Social/Behavioral Sciences general studies designated course. The current FSE 194 is an SB, but a new proposal is needed now that it is a permanent course number.

Since you can't sign the cover sheet, once you review the documents, could you email me your approval? I'll add it to the packet to be submitted. If you have changes, please let me know.

Thanks,

Amy Sever
Associate Director, Undergraduate Student Engagement Ira A. Fulton Schools of Engineering
480-727-8713
amy.sever@asu.edu<mailto:amy.sever@asu.edu>

From: Lauren Leo
Sent: Wednesday, May 14, 2014 4:51 PM
To: Jeremy Helm
Cc: Amy Sever; Phyllis Lucie
Subject: RE: ChangeMaker - FSE 150 Perspectives in Grand Challenges for Engineering 3 - 2151: Spring 2015 | CL: None
3/31/2014

Hello Jeremy,

Thank you for your email. Amy's note below is correct. Per the General Studies Council policies and procedures available on the General Studies Council website<<https://provost.asu.edu/generalstudies>>, once a course receives a permanent number, it must be resubmitted to the General Studies Council in order to be granted a General Studies designation.

Our first meeting for the upcoming academic year is August 26th. If the course is submitted at least two weeks prior to the meeting (August 12th), and is approved by the General Studies Council, we can make the request that University Registrar Services implement the designation with a Spring 2015 effective date.

For your convenience, all of the required elements for a proposal are included on this website<<https://provost.asu.edu/generalstudies/gsdasu>>.

Please let me know if you have any additional questions or concerns.

Thank you,
Lauren Leo
Lauren Leo
Curriculum Coordinator, Curricular Activities and Actions Office of the University Provost Arizona State University
Phone: 480-965-4194
E-mail: Lauren.Leo@asu.edu<mailto:Lauren.Leo@asu.edu>

Proposer: Please complete the following section and attach appropriate documentation.

ASU--[SB] CRITERIA					
A SOCIAL-BEHAVIORAL SCIENCES [SB] course should meet all of the following criteria. If not, a rationale for exclusion should be provided.					
YES	NO		Identify Documentation Submitted		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Course is designed to advance basic understanding and knowledge about human interaction.	Syllabus, course description, table of contents (some readings will be selected excerpts from this book)		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Course content emphasizes the study of social behavior such as that found in: <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 60%; vertical-align: top;"> <ul style="list-style-type: none"> • ANTHROPOLOGY • ECONOMICS • CULTURAL GEOGRAPHY • HISTORY </td> <td style="width: 40%; vertical-align: top; text-align: center;">Technology</td> </tr> </table>	<ul style="list-style-type: none"> • ANTHROPOLOGY • ECONOMICS • CULTURAL GEOGRAPHY • HISTORY 	Technology	Syllabus, course description, table of contents (some readings will be selected excerpts from this book)
<ul style="list-style-type: none"> • ANTHROPOLOGY • ECONOMICS • CULTURAL GEOGRAPHY • HISTORY 	Technology				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Course emphasizes: <ul style="list-style-type: none"> a. the distinct knowledge base of the social and behavioral sciences (e.g., sociological anthropological). <li style="text-align: center;">OR b. the distinct methods of inquiry of the social and behavioral sciences (e.g., ethnography, historical analysis). 	Syllabus, course description		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Course illustrates use of social and behavioral science perspectives and data.	Syllabus, course description		
		THE FOLLOWING TYPES OF COURSES ARE EXCLUDED FROM THE [SB] AREA EVEN THOUGH THEY MIGHT GIVE SOME CONSIDERATION TO SOCIAL AND BEHAVIORAL SCIENCE CONCERNS:			
		• Courses with primarily arts, humanities, literary or philosophical content.			
		• Courses with primarily natural or physical science content.			
		• Courses with predominantly applied orientation for professional skills or training purposes.			
		• Courses emphasizing primarily oral, quantitative, or written skills.			

Course Prefix	Number	Title	General Studies Designation
FSE	150	Perspectives in Grand Challenges for Engineering	SB

Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

Criteria (from checklist)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
Advance basic understanding & knowledge about human interaction	This course provides opportunities for students to explore how different people and societies respond to the challenges they face. Students will study past and present examples of how human interactions in society shape technology and also how technology impacts human interaction.	In the first few weeks of the course, students will work in groups to study historical examples of the interaction between technology and society to observe how human behavior influences the evolution of technology. During the Grand Challenge Theme weeks, students will participate in activities and discussions exploring the social systems, policies, and global pressures that must be considered when developing solutions to challenges in each theme area (Health, Energy, Sustainability, Security, Education).
Emphasizes the study of social behavior	This course focuses on studying the connection(s) between society and technology. Students will explore examples of society shaping technology, as well as examples of technology shaping society. Throughout the course, students will explore how technology impacts social interactions, behavior, policies, and culture currently, in the past, and how it may impact lives in the future.	During the first few weeks, students will study historical examples of how technology has influenced society and vice versa. They will read about the 'Social Construction of Technology' theory and apply it to current examples during class. During the middle of the course, students will complete a research paper ('Enabling Technology Project') in which they will describe current technologies being developed to solve one of the Grand Challenges. In that paper they will also discuss how society might influence the use or success of that

		particular technology/solution and how the implementation of that solution may affect society.
Distinct knowledge base of social and behavioral sciences (sociological anthropological)	Throughout the course students will study how humans have reacted to challenges and technology throughout history and in the present. Students will study how technology influences culture, policy, and social systems in different areas of the world. They will also examine how social, global, and political factors influence the success or failure of a technology and/or technological changes.	During the Grand Challenge Theme weeks, students will complete readings and activities to understand the local and global challenges faced by several different societies. They will learn how challenges and solutions are influenced by societal circumstances, geography, economic development, legislation, and political systems.
Use of social behavioral science perspectives and data	Students in this course will find and analyze qualitative and quantitative data on demographics, resources, policies, etc., to better understand the challenges that societies face. They will use this information to help them to predict how a new solution or technology might impact society and/or be influenced by society.	During the last half of the course, students will complete a final team project, the 'Future Solutions project', in which they will develop a possible solution for one of the Grand Challenges. As part of this project, students must consider how the society (culture, geography, policies, etc.) would influence the development and implementation of their 'future' solution, and how society might change if their solution is implemented. They will look at historical trends, information, and data to support their claims about the possible future impact of their technology on society and vice versa.

FSE150: Perspectives on the Grand Challenges for Engineering Course Syllabus

Instructor Information

Amy Trowbridge, MS
Office: GWC172
Phone: 480-965-4830
Email: aktrow@asu.edu

Office Hours

Catalog Description

Explores social dimensions of developing engineering solutions to meet local and global challenges. Introduces National Academy of Engineering (NAE) Grand Challenges for engineering and Grand Challenge Scholars Program.

Credit Hours: 3

Pre-requisites: Admission to Grand Challenge Scholars Program

Course Description

This course, centered on the theme of National Academy of Engineering's (NAE) Grand Challenges for Engineering in the 21st century, will offer the opportunity for students to develop an interdisciplinary appreciation for the Grand Challenges. This course will increase students' awareness of the social complexities of meeting the needs of local and global challenges through engineering and technology. Students will also learn more about the Grand Challenge Scholars program, begin their path towards making a Grand Challenge area their life's passion, and will start creating a plan to complete the program components during their undergraduate studies.

Course Learning Outcomes

As a result of taking this course, students will:

1. Develop an understanding of the engineering grand challenges that human societies face in the 21st century.
2. Describe the research themes at ASU, and locate ongoing research at ASU in all Grand Challenge theme areas.
3. Discuss the interdisciplinary, global nature of the Grand Challenges, and how that impacts potential solutions.
4. Demonstrate an awareness of social and cultural issues that may impact engineering and technology.
5. Create a preliminary plan of study for completing the five components (research, interdisciplinary, entrepreneurship, global, service learning) of the Grand Challenge Scholars Program during their undergraduate career.

Course Materials

There is no required textbook for this course. Selected readings will be provided from various sources each week and will be available on Blackboard. All materials, assignment details, and due dates will be available on Blackboard. You will be expected to use the 'Blog' feature on Blackboard to complete Portfolio entries and comment on other students' entries throughout the semester. **You are expected to check Blackboard regularly.**

Course Grading

Participation and teamwork is critical to your success in this course. There will be no exams to evaluate student performance in this course; performance will be assessed based on participation, GCSP Planning assignments, a Portfolio, and two projects. The table below provides details on how your performance will be assessed in this course. Additional materials which specifically outline the expectations for each assignment will be provided in class and/or on Blackboard. Assignment due dates will be posted on Blackboard.

	Percentage
In-Class Participation (<i>Individual</i>)	5
GCSP Planning (<i>Individual</i>)	15
Portfolio (<i>Individual</i>)	20
Enabling Technology Project (<i>Individual</i>)	25
Future Solutions Project (<i>Team</i>)	35

Your final course grade will be based on the percentage of total points you earn during the semester as follows:

A+, A, A-	97+, 92-97, 89.6-92%
B+, B, B-	87-89.5, 82-87, 79.6-82%
C+, C	77-79.5, 70-77%
D	60-70%
E	less than 60%

Course Requirements

Attendance

Since this course includes many discussions and other in-class activities, attendance and active participation are essential to your success in this course. Missing classes and excessive tardiness (more than 5 minutes late to class) will result in a reduction in the In-Class Participation grade. An absence will not be counted against a student for excused absences (illness, death in the family, university sanctioned event, etc.) providing that the reason for the absence is documented **in writing** and the instructor is notified **prior** to the absence (if possible). Students who miss class are responsible for contacting the instructor for lecture materials and homework/assignment information. Arrangements for any make-up work for an excused absence should be done prior to the absence (if possible).

Assignments

All assignments must be turned in before the deadline stated on Blackboard and/or in class. No late assignments will be accepted except for university accepted reasons (i.e. illness, death in the family, university sanctioned event, etc.). Please contact the instructor if you miss an assignment due to sickness, injury or other valid reason. If you believe you have received an incorrect grade on any assignment or quiz, you must notify the instructor within 1 week of the receipt of the grade.

Academic Integrity

ASU expects and requires all its students to act with honesty and integrity, and respect the rights of others in carrying out all academic assignments, in accordance with the ASU Academic Integrity Policy (AIP), available at <http://provost.asu.edu/academicintegrity>. As a student in the Ira A. Fulton Schools of Engineering, you are also expected to act in accordance with the Fulton Engineering Honor Code <http://engineering.asu.edu/integrity>. Any form of plagiarism and cheating will not be tolerated.

Plagiarism includes, but is not limited to the following: copying another student's work; copying or using words or ideas from a book, article, website, etc. without citing the source(s) correctly. Anyone found to have violated the academic integrity policy will (as a minimum) receive a zero on the assignment in question for the first offense. For the second offense, the minimum sanction will be receiving a grade of XE for the class and a one-year ineligibility from the Fulton Schools of Engineering.

You are encouraged to work with others on assignments. However, assignments denoted as **individual** assignments **MUST** be your own, original work. If you work with others on these assignments, you must acknowledge their help. Directly copying any work from another student's assignment is **NOT** acceptable.

Group/team assignments are expected to be the original work of the group/team. All members of the team must participate in completing these assignments. The details of how each member participates in each assignment will be left up to the individuals in the team. The instructor reserves the right to give zero or partial credit to individuals within the team who do not participate in completing team assignments.

Classroom Policy

Students are expected to conduct themselves professionally in class. Any behavior that might cause hindrance to the progress of the class is not acceptable. Students are requested to refrain from using pagers, cell phones, or laptops during class (except for note taking or other class related purposes) so as not to disturb the other students. You should not be texting, surfing the web, or doing other non-class related activities on your computer, tablet, or cell phone during the lecture time.

Students are allowed to use recording devices, but commercial distribution of the recordings is not permitted. The course content, including lectures, is copyrighted material and students may not sell notes taken during the conduct of the course (see ACD 304-06, "Commercial Note Taking Services" for more information).

Disability Accommodations

Students with disabilities who may require special accommodations are encouraged to request for them through the Disability Research Center. All such requests will be kept confidential and every attempt will be made to provide equal access.

Policy Against Threatening Behavior

Any kind of threatening behavior against the students or the instructor will be handled per the *Student Services Manual*, SSM 104-02, "Handling Disruptive, Threatening, or Violent Individuals on Campus"

Course Organization

This course is designed to provide an introduction to the social complexities of developing solutions to NAE Grand Challenges in Energy, Sustainability, Security, Health, and Education. A variety of instructional methods will be used during class including small group discussions, class discussions, hands-on activities, and presenting ideas to the class. Readings will be assigned approximately weekly to provide material for in-class discussion. The course will also include opportunities for interactions with faculty guest speakers in each Grand Challenge Theme area.

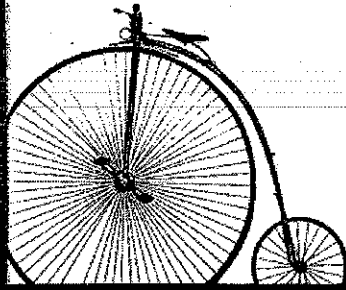
Throughout the course, students will explore the Grand Challenges and the influence of societal, cultural and other nontechnical factors on engineering and technology. The general structure of the course, in chronological order, can be seen in the table below. The order in which the Grand Challenge theme areas are discussed will be determined based on faculty availability for guest lectures.

FSE194 Course Schedule (Tentative*)

Week	Topic	Assignments Due (Friday night unless otherwise specified)
1	Course Overview; Intro to Grand Challenges	
2	GCSP Requirements; Technology & Society	Portfolio 1; GCSP Planning HW
3	Evolution of Technology, Enabling Technologies	
4	Grand Challenge Theme 1	Enabling Technology Project Topic; Portfolio 2
5	Grand Challenge Theme 2	Portfolio 3
6	Grand Challenge Theme 3	Portfolio 4
7	Grand Challenge Theme 4	Portfolio 5
8	Grand Challenge Theme 5	Enabling Technology Project; Portfolio 6
9	Intro to Future Solutions Project, Enabling Tech Pres.	Deliverable 1;
10	Project work: The 'Human Element'	Deliverable 2;
11	Project work: Technology Development (Milestones)	Deliverable 3
12	Project work: Creating Models	Deliverable 4
13	'Mock' poster session; Entrepreneurship	Poster (Draft)
14	Models; Student Experience	Final Poster
15	Wrap-up	GCSP Plan of Study; Portfolio 7
Final Exam Period: Project Poster Session		

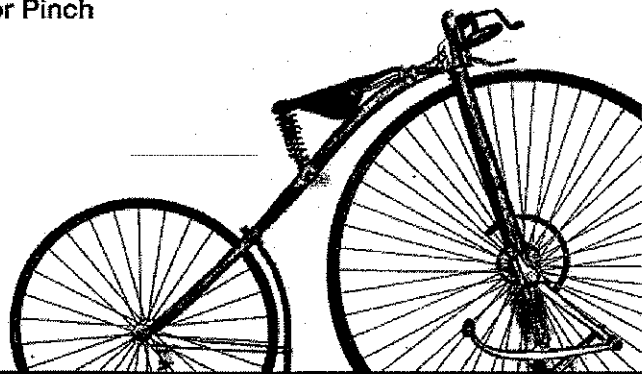
*This schedule is tentative and may be changed during the semester as needed.

Anniversary Edition



**New Directions in the
Sociology and
History of Technology**

edited by
**Wiebe E. Bijker
Thomas P. Hughes and
Trevor Pinch**



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